REAKTOR USER ENSEMBLES v.02B

Collected by Simon Hunt – March 2008

click the blue

BEAT SEQUENCERS

rhythm-making machines, with or without onboard sequencers. Some load audio files, some create sounds via synthesis

EFFECTS

Effects to add to your audio tracks or instrument tracks

SAMPLERS – BASIC

Instruments to load your audio files into

SAMPLERS – GRANULAR

More complex samplers that create textures from your audio files

SYNTHESIZERS – EMULATION

Synthesizers that emulate either classic hardware synthesizers or particular musical instruments

SYNTHESIZERS – OTHER

Other synthesizers

BEAT SEQUENCERS

TERMINAL GLITCH

By Dean Lowe

Terminal Glitch is a 4 track Percussion/Melody Sequencer especially designed for IDM and Glitch music, although it can be used for any sort of music you like.

It features 4 Oscillators each with dedicated Gate Sequence and Filter section. A global pitch sequence (scale sequence is a more suitable name) with a list of predefined scales to choose from and a user definable scale which is capable of microtonal scales. Automatable faders (some dedicated, others assignable) and a repeater section based on Exile's Glex module. The sequencers also feature controllable step randomization.

Please click on the 'B' view for further utilities and a small user manual covering some of the more complex operations.

Play Protools to start the sequencer.

EFFECTS

EchHase

By Dieter Zobel

Delay effect with multiple feedback paths.

KOHRUSS

By Dieter Zobel

"abused pitchshiphtor" (sic).
Phase / flange / delay with good feedback options and random detune field.

LASERBREW

By Tim Schwerdtfeger

the other side of reverb
Laserbrew is a totally new approach to reverb effects and doesn´t try to simulate the reflections of a real room - it´s actually based on a physical model of a damped string and went the PSP PianoVerb way but it now goes far beyond that: It´s able to produce everything from lush organic washes to resonant modulated outta space effects.
Great for everything special, no matter whether it´s electronic or acoustic. It´s quite a CPU hog, so be careful. **Check preset 04 – piano**

LILTHREE

By Tim Schwerdtfeger

"lilthree are three little macros that process stereo audio data.

the first one called **'AM'** is a simple but useful amplitude modulation macro which does well-known **tremolo effects with adjustable speed and intensity**. it can operate at audible frequencies and therefore i implemented an alternative ringmodulator-mode.the second macro

('FM') does something that is not so well-known: **frequency modulation with external audio signals.** the special thing is: the audio input doesn´t modulate a built-in oscillator, the oscillator will modulate the audio material! weird but not so strange effects are the result because the audio-input stays recognizable.

the third and biggest one is called **'Rotation':** it is able to **rotate every audio input within stereo field but without any loss of stereo information!** it´ll be quite new for most users, but give it a try, it´s really nice for animating static sounds within the mix or fuzzy stereo modulation at higher rates.

four waveforms per effect to choose from

Preset 5 Stereo rotation is great for livening up dull mono or stereo material

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MAGMA

By James Clark

(self-generating rather than an effect)
Magma flow - hot stuff
Something to annoy your neighbors with. A silly (but note the cool plasma displays) little ambient gurgler dedicated to my cranky bathroom plumbing which periodically makes a mess.

MICHAT´S MULTIHEAD TAPEECHO

By Michael Wöstefeld

Tapeecho simulation (Space Echo)
Tapeecho simulation with four playback heads, tape simulation & drive error simulation

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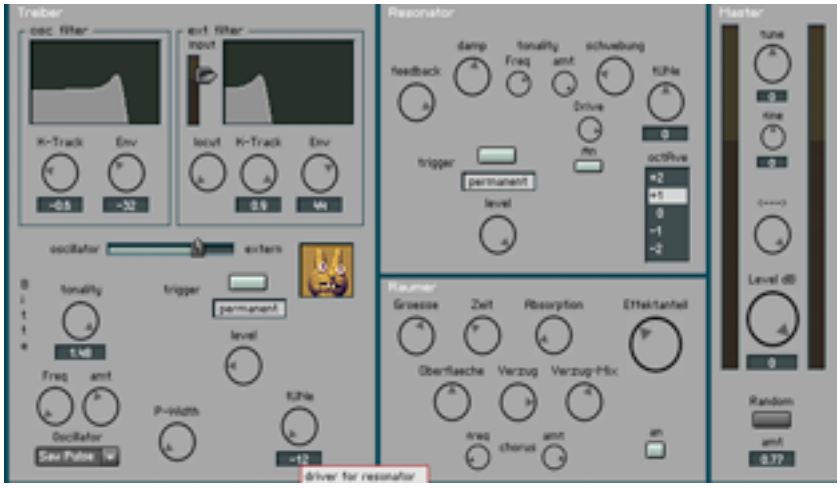
MICHAT´S DRONE ECHO

By Michael Wöstefeld

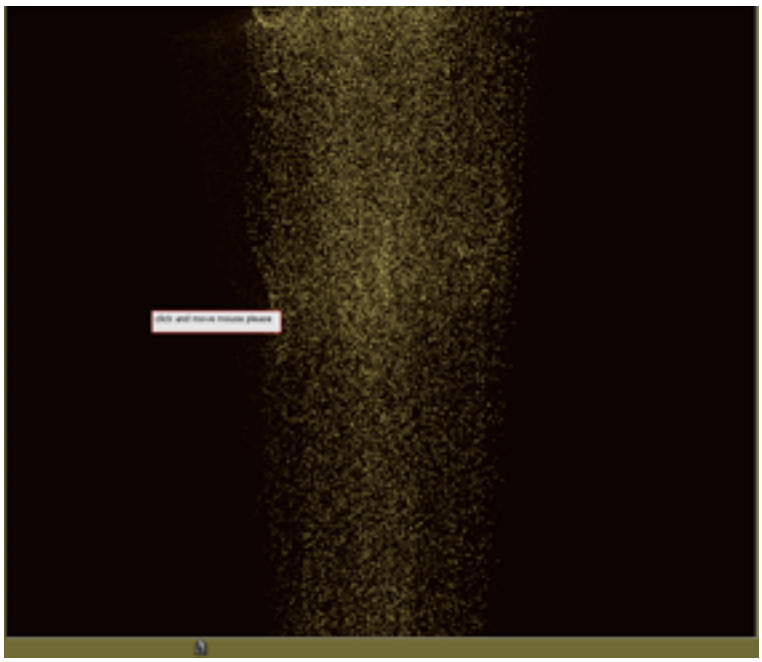
Echo with unlimited feedback possibilities
The DroneEcho DE- P01 is a delay based on diffuser delays. You will be able to do dubeffects without distorting the feedback.
Preecho->input diffusion->main echo
including "tape noise", "tape error" and feedback "shape"
Input filters serial or parallel
syncable delay
cross-feedback



RESONATTER

By Dieter Zobel

synth/resonator effekt
resonator effekt/synth,
should be feeded with an audio signal.
Der freundliche Nager wird es Dir danken.
* Extraordinary resonator, try preset 012 ‘und struppi’ and 03 ‘an der seite’.



TRAVEL LISA

By Dieter Zobel

“granular toy,
suitable for children”

Deep granular (de)composer! Feed audio to it, choose presets , Click and drag the mouse within the fields, move the buttons at the base and the right. Click the structure button to have a look inside.

SYNTHESIZERS – EMULATION

21st CENTURY THEREMIN

By Joel Kruse

This is a fake **theremin** with a few extras. There are 2 control modes: mouse mode and midi mode. Low CPU usage.

Use your mouse in the X-Y field, change oscillator types at right.
http://en.wikipedia.org/wiki/Theremin

HALLELUJAH

By Martijn Zwartjes

Church Choir Simulator
Using 7 sawtooths and 4 SVF Filters.

LUNCHBOX-303

By eige kitamura

an emulation of the **Roland TB-303** (1982)
"new kitchen techno setup"
Extensive instructions within the ensemble itself.
http://en.wikipedia.org/wiki/Roland_TB-303
Press play on Protools and choose presets to start.

MINIMOOD R5

By Jonathan Style

an emulation of the monophonic analogue **Minimoog** (1970)
Extra FX windows at base.
Keyboard on GUI doesn't work.
http://en.wikipedia.org/wiki/Minimoog

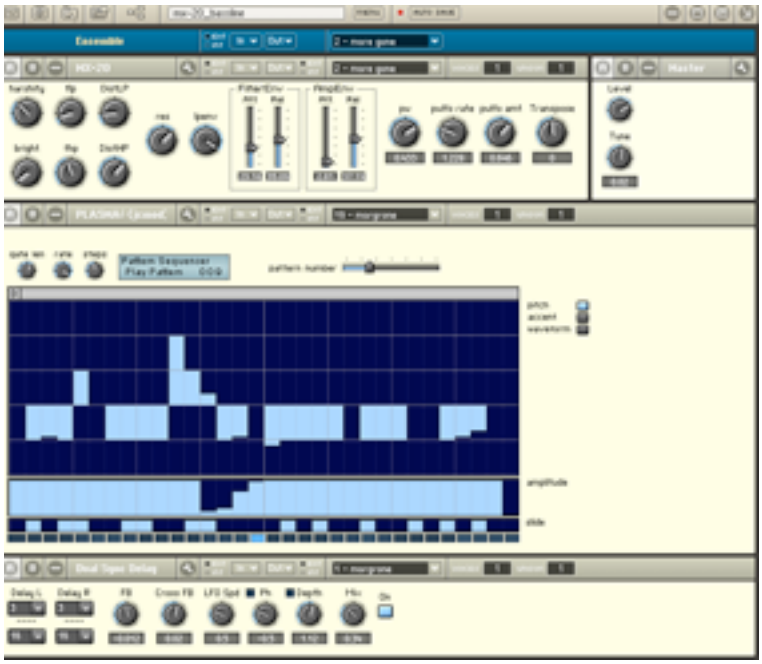
MONA/POLLY

By James Clark

I did my best to come up with a synth that gives some sense of the sonic insanity of the **Korg Mono/Poly (1981).** There are a lot of differences, thus I call it a parody rather than an emulation! The poly mode is not quite right, and the Share mode is not even close. The sound of the filter is wayyy off. And there is a problem with the snapshots. Changing one snapshot can affect others, and some things don't seem to saved correctly.
http://en.wikipedia.org/wiki/Korg_mono/poly
I split my Mona/Polly synth into **two views - A: left half of panel, B: right half of panel.** I guess switching between A/B views is better (faster) than scrolling.

Simon Hunt's note :
Until I manage to stick an updated version in the ensembles folder, do the following :

- go to **OUTPUT section** and flick switch from "off" to "high"
- go to **Structure View** and connect the output to "2" as well, so that you hear the right channel.



MX-20 Bassline

By James Clark

Vanilla bassline seq with new core filter
Nothing special here, but I was fooling with the core and came up with a new filter, loosely modeled after the **Korg MS-20**. Added the Plasma sequencer borrowed from the prolific Steven V. And a delay. Which you can turn off.
Some of the presets will cause an overload on startup for some reason.
Press play on protools to start.

SEHKTAR

By James Clark

Physically modeled **Sitar**
Sounds pretty good to my ears, especially at high sampling rates (tip: for any physical model use as high a sampling rate as your computer can handle). If it sounds out of tune, it is due to your Westernized ears!

FULL MANUAL at end of this document

SIXTEEN

By Chet Singer

String machine with sixteen oscillators
This is a basic string machine that creates thickness by stacking sixteen oscillators instead of using a chorus.
Eight of the oscillators can be tuned one octave lower.
The SpaceMaster reverb is included to provide ambience.
Graphic control elements are by Vera Kinter at www.artvera-music.com, and supplied by Bernd Keil.

WHACK IT

By Chet Singer

Waveguide physical model of a slap bass
This is a physical model of a slap bass, containing a pair of waveguide strings which can hit a fret and buzz when struck hard enough.

The snapshots included in this instrument have been tuned for use with 44.1 kHz sample rate. Other sample rates may require retuning using the controls available on the "String" page.

The graphic control elements were created by Vera Kinter, URL http://www.artvera-music.com.

Some of the controls are self-explanatory, such as Tune, Transpose, Pitch Wheel Depth, and Output level.

"Number of Strings" can be set to either 1 or 2. When set to 1, legato playing can create clicks, and can also build up significant energy in the string, making it more likely to hit the fret. While this may be undesirable when playing a straightforward bass, it can add some nice body to the sound when playing a snapshot that whacks the fret heavily.

There are seven parameter pages: Thumb, String, Slap Fret, Pickups, 10-band EQ, Compressor, and Modulations:

Thumb:
This is the initial excitation of the string, and consists of a short burst of filtered noise. An attack/decay envelope generator controls the excitation's shape, and a 1- or 2-pole lowpass filter controls the brightness. The Strength control determines how much energy is applied to the string. The pluck point can be moved along the string, or can be turned off. If turned off, the model resembles a Karplus-Strong string.

String:
The string is a standard waveguide model. The decay time and high-frequency loss are controlled by the Sustain and Tone controls. The Release control determines how long the string rings when a note is released. The sustain, tone, and pitch can be adjusted at every fourth semitone (C, E, and G#). These adjustments are useful when programming sounds that remain musical over a wide range of notes. They can also compensate for the tendency of waveguide models to go flat on high notes. Please note that changing the Tone control may make

the string go flat or sharp, and require re-tuning.

Slap Fret:
This is a fret, which when hit by the string, causes the string's energy to reflect back in the direction it came from. Parameters include the fret's position on the fret board, the fret's distance from the string, and the reflection's gain. The distance between the fret and the string determines how easily the fret will be hit. A lamp indicates when the string and fret are in contact. A switch can disable the slap fret. To make an expressive slap bass, route key velocity to Thumb Strength, and adjust the distance between the fret and the string.

Pickups:
This is the output of the model. Three outputs are provided: an acoustic pickup at the bridge, a movable electric pickup, and the initial thumb excitation impulse.

10-Band EQ:
The 10-band equalizer is the standard Reaktor equalizer, stripped to a single mono channel. There are also two additional filters. The first is called Big Bottom, which tracks and emphasizes the note's fundamental frequency. The second is called an Acoustic Filter, and is an array of bandpass filters that mimics the resonances in a string bass.

Compressor:
The compressor is the standard Reaktor compressor, stripped to a single mono channel.

Modulations:
MIDI modulations are programmed here. Six busses are provided. Each bus has a source, destination, curvature, modulation amount (both positive and negative) and on/off switch. Sources are various MIDI inputs (mod wheel, velocity, etc.). Destinations are various parameters of the model (attack time, thumb strength, fret position, etc.).

SYNTHESIZERS – OTHER

BABBLE ON

By James Clark

3 voice speech synthesizer

The Babble_On ensemble comprises three Speech Synthesizer instruments with snapshot based sequencing. The ensemble can store up to 16 songs, each of which can be made up of up to 128 patterns of up to 16 phonemes each.

The speech synthesizer can generate 29 distinct phonemes. Some additional phonemes can be generated by concatenating the provided phonemes. The pitch of the synthesized voices can be adjusted over a 5-octave range. A pattern-specific transposition is available for each voice, which adjusts the pitch and shifts the vocal formants, allowing a wide range of different voice qualities (male, female, etc) to be generated.

Press play on Protools and listen to "Are you lonesome tonight" ☺

FULL MANUAL at end of this document

CLUSTER 16

By James Clark

Cluster Pad Synth

Cluster 16 came about after swapping out oscillators in Chet Singers' Sixteen string synth. I added a Chorus and took out the filters. One thing led to another and a completely different synth evolved. I added FM modulators to control the four banks of oscillators with Rick Scott's Randomation to randomize their values. To best experience the effect of the randomizers, hold a note for a long time. All included snaps are with the randomizers ON, but if you find a sound you like, just turn them off.

Mach II version has more wave options and reintroduced filter. Sounds like the original with all set to sine and filter OFF. Added snaps

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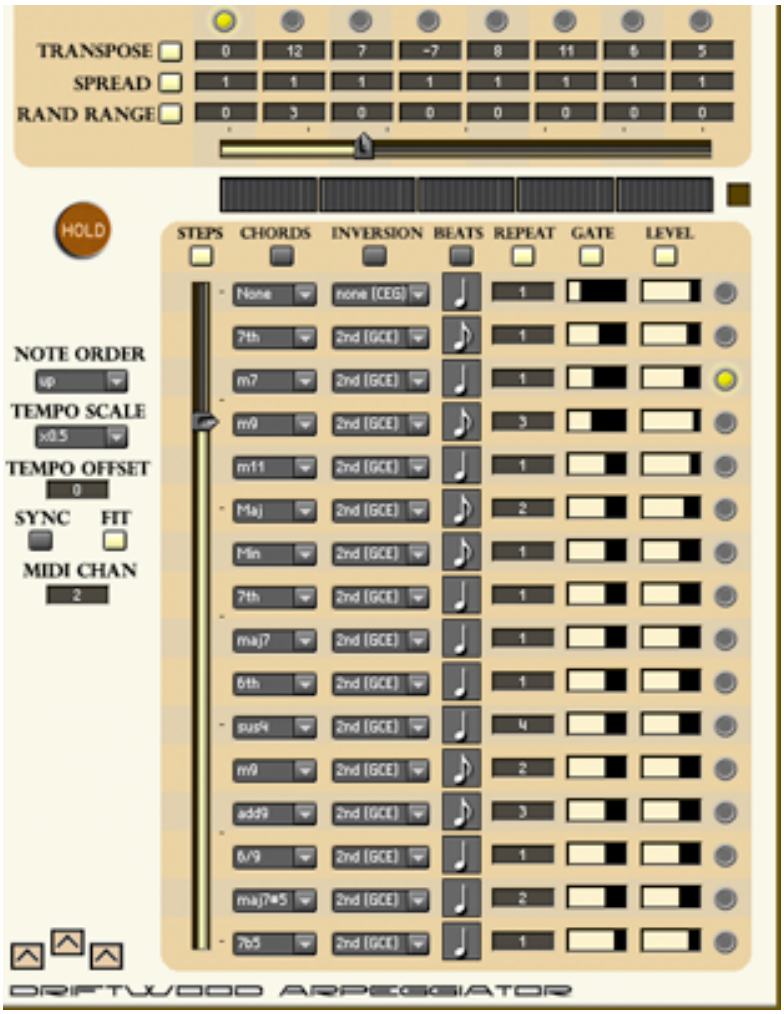


DRIFTWOOD ARPEGGIATOR

By James Clark

Complex arpeggiator

A complex but fun arpeggiator, for those who like things going up and down and sideways. Combine with your favorite noise maker for hours of fun. Mouse-over the controls and buttons to get info on how to make it run. Includes the library synth **Carbon** for demo.

MICHATS SHINY SYNTHESIZER V1.0

By Michael Wöstefeld

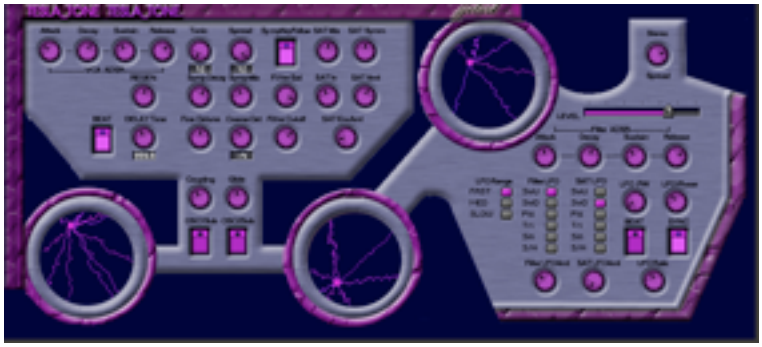
Synthesizer for the twinkle pad sounds
Michats Shiny Synthesizer is designed to produce twinkle pad sounds. It contains two sections:
On the left the basic section with three "analog" oscillators and a sample player for the basic pad sound.
On the right the shiny section, which is the same but with a user-controllable pitch-table and a chorus.
Both sections have all filters with main envelope and an own volume envelope. For the master there are envelope and lfo plus a delay routable on pad, shiny or both.
Happy twinkling!

MONO FM

By Stephan V

Monophonic FM Synthesizer
A simple and very CPU-friendly 2-operator-FM-synthesizer for bass and lead sounds. Quick and dirty.

- 2 operators with feedback, adsr-envelope
- 2-pole-lowpass filter with adsr-envelope
- 1 lfo and 1 modulation envelope (ad)
- equalizer, chorus and delay effects
- 32 snapshots



TESLA TONE

By James Clark

Kickbutt lead synth
If Nikola Tesla built synths, maybe he would build something like this one! I must congratulate NI on doing a wonderful job with their new Transistor Ladder filter core cell. It sounds lovely...
The 3 large sparking electric zapper thingies are x-y controllers.

This synth contains two complex oscillators, two slaved transistor ladder filters feeding into a saturating distortion module. The output of the distortion is fed in to a set of 8 parallel delay line resonators, to provide a "sympathetic resonance" effect. The frequencies of the resonators are spread out from a tonic note (which can be fixed, or set to follow the MIDI Notes) with an adjustable spread. The output of the filters, distortion, and sympathetic resonators are summed together and passed to a simple delay/echo unit, and then on to the synth's output. Modulation is provided by an ADSR envelope generator and a multi-wave LFO, and can control the filter cutoff frequency and the saturation level.

The complex oscillators consist of a serial chain of 4 sine-wave oscillators, each modulating the frequency of the next in the chain. Two addition multi-wave oscillators are added to the middle and end of the chain. The outputs of the 4 sine-oscillators and the 2 multiwave oscillators are summed and output.

The user-interface is pretty straightforward. The 3 large sparking electric zapper thingies are x-y controllers. The left-most controller morphs the output of the multiwave oscillator in osc1 between TRIANGLE (UpperLeft), SINE (UpperRight), SAW (LowerLeft) and SQUARE (LowerRight) waveforms. The middle controller does the same for osc2. The right-most controller controls the Filter Envelope Modulation amount (vertical axis) and the Filter resonance (horizontal axis).

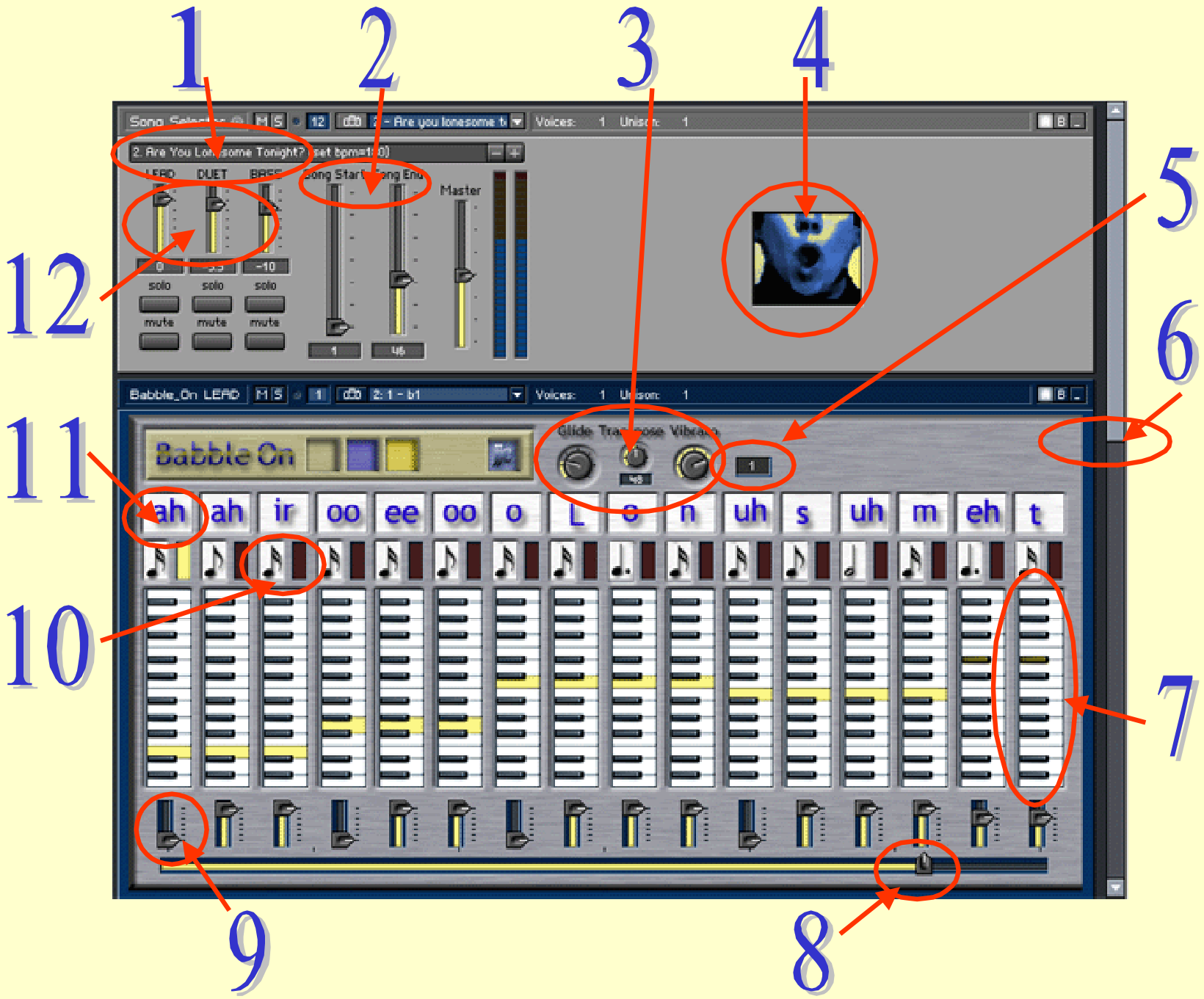
The Filter Envelope Mod amount is also mapped to MIDI controller 1 (Mod Wheel). Filter resonance is mapped to MIDI controller 2, OSC2 waveform select X-axis is mapped to MIDI controller 3, Y-axis to MIDI controller 4, and for OSC1 these are mapped to MIDI controller 5 and 6, respectively.

Babble_On – A 3-voice Speech Synthesizer for Reaktor

OVERVIEW

The Babble_On ensemble comprises three Speech Synthesizer instruments with snapshot based sequencing. The ensemble can store up to 16 songs, each of which can be made up of up to 128 patterns of up to 16 phonemes each.

The speech synthesizer can generate 29 distinct phonemes. Some additional phonemes can be generated by concatenating the provided phonemes. The pitch of the synthesized voices can be adjusted over a 5-octave range. A pattern-specific transposition is available for each voice, which adjusts the pitch and shifts the vocal formants, allowing a wide range of different voice qualities (male, female, etc) to be generated.


1
2
3
4
5
6
7
8
9
10
11
12
Babble On
Babble_On LEAD
Master
LEAD
DUET
solo
mute
ah ah ir oo ee oo o L o n uh s uh m eh t

1. **Song Select** – this selects the song to play. It actually switches the snapshot banks for each of the Babble_On instruments.
2. **Song Start/End** – these select the pattern numbers (snapshot number) at which song playback begins and ends.
3. **Glide/Transpose/Vibrato** – these can be set independently for each pattern. The transpose both shifts the pitch up or down and shifts the formant frequencies, modeling the difference in formants for men, women, and children.
4. **Lip Reading Display** – this shows the mouth shape for the currently playing phoneme (for the topmost Babble_On instrument).
5. **Pattern Number** – shows the number of the currently playing pattern (snapshot).
6. **Scrollbar** – use this to scroll down to the other two Babble_On instruments.
7. **Keyboard** – use this to set the pitch of the phonemes in the current pattern.
8. **Pattern Length** – this sets the last step in the displayed pattern. Phonemes after this point will not be played.
9. **Amplitude** – sets the amplitude of the phoneme associated with the pattern step.
10. **Note Length** – sets the length of the associated pattern step.
11. **Phoneme Select** – chooses the desired phoneme to play. 29 different phonemes are available.
12. **Voice Mixer** – set the levels of the 3 individual Babble_On instruments. They can also be individually muted or soloed.

How to Use

The first thing to understand in using Babble_On is that the sequencer in the Babble_On instrument is ***snapshot***-based. Different songs (up to a total of 16) are selected by loading different snapshot ***banks***, one bank to a song.

When you press the ***START*** button in the Reaktor toolbar, the pattern selected by the ***Song Start*** slider will be loaded, by selecting the associated snapshot in the current bank, and the pattern will start playing. The pattern will progress one step at a time, until the step selected by the pattern's ***Last Step*** slider is reached. At this point, the next pattern or snapshot (in numerical order) is loaded, and the new pattern is played. This process continues until the pattern selected by the ***Song End*** slider has been played. When this last pattern has been played, the sequencing stops.

If you want to create your own song, start by using the song select control to select an unused song bank. Then enter your phoneme patterns, one snapshot at a time, beginning with snapshot #1. Remember to overwrite the snapshot when you have entered the phoneme pattern information! Go to the next snapshot by appending the current one, and enter the new phoneme pattern information. Continue adding patterns/snapshots until your song is done.

List of Available Phonemes

ee	As in “BEET”
ih	As in “BIT”
eh	As in “BET”
a	As in “BAT”
ah	As in “BOUGHT”
oo	As in “BOOT”
o	As in “BOAT”
uh	As in “BUT”
ir	Provides “R” sounds
ou	As in “SHOULD”
L	
m	
ng	As in “SING”
n	

b	
g	
d	
p	
k	
t	
f	
sh	
s	
th	(unvoiced) As in “THIN”
v	
zh	
z	
th	(voiced) As in “THEN”
h	

Some other phonemes can be obtained by combining certain of the given phonemes:

W – combine the phoneme "OO" with some other vowel. If the W is at the beginning or middle of a word, place the second vowel after the "OO" phoneme, otherwise if the W is at the end of a work, place the second vowel before the "OO" phoneme.
E.g. to produce "WE", concatenate the "OO" and "EE" phonemes. The "OO" phoneme should be rather short in duration.

Y – similar to the creation of a W, but use the phoneme "EE" instead of "OO". E.g. to produce "YOU", concatenate the "EE" and "OO" phonemes. The "EE" phoneme should have a short duration.

CH – Concatenate the "T" and "SH" phonemes.

J – Concatenate the "D" and "ZH" phonemes.

To get the right sound, you need to enter data phonetically, rather than just spelling out the words.

For example, here is how to enter the phrase ***"Are you lonesome…"***

Note: These phonemes have their amplitudes set to zero, and hence will be silent. It is still important to set these silent phonemes correctly, as they can affect the sound of the phonemes before and after. A good rule of thumb is to set the silent phonemes to be the same as the next vowel to be expressed. The pitch of the silent phonemes should be set to the pitch of the next non-silent phoneme, to avoid any undesired glitchy pitch transition.

Sehktar by *JJClark* (2005)

This *Reaktor5* ensemble is a physical model of a *sitar*.

Physical Modeling Details

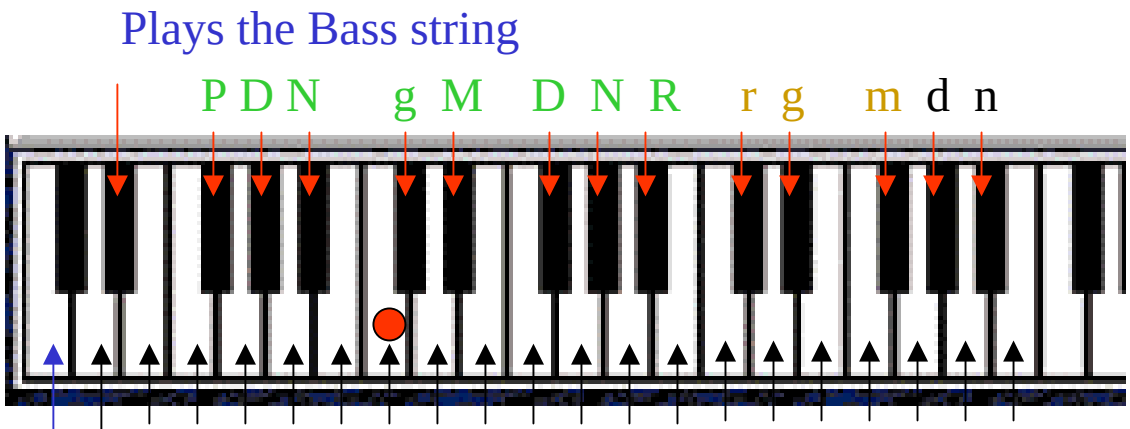
The ***Sehktar*** strings are implemented using delay lines with feedback, similar to the Karplus-Strong string model. Two delay lines are used for each melody string, to model the horizontal and vertical vibrational modes of a real string. The amount of detuning between these two modes can be adjusted with the ***Mode Detune*** control. The influence of location of the picking point is modeled by altering the spectral components of the noise excitation signal. It can be adjusted with the ***Pluck Pos*** control. The overall brightness of the string sound is controlled with a lowpass filter, and adjustable with the ***Bright*** control. The decay rate of the string sound is set by the amount of energy loss in the string, modeled by a lowpass filter in the feedback loop. Decreasing the cutoff frequency of the filter results in a greater damping of the string. The damping of the melody, bass and Chikari strings can be adjusted with their respective ***Damp*** controls.

The nominal pitch of the string sound is set by the delay time of the delay lines. A pitch envelope raises the pitch slightly, by an amount set by the ***Penv*** control, when the string is plucked. This models the stretching (increase in tension) of the string when plucked.

The unique buzzy sound of the sitar is due mainly to the nonlinear nature of the bridge. The bridge is curved, which means that the length of the string (and hence its vibrational rate) is dependent on the amplitude of the vibration. As the string vibrates up and down, its end point moves back and forth along the curve of the bridge. This bridge nonlinearity is modeled by modulating the delay line delay times as a function of the string's sound amplitude. The amount of the nonlinear effect is set by the ***Jawari*** control (Jawari is the Indian name for the bridge).

Finally, coupling between the strings is modeled, and is crucial to obtaining the resonant sound of the sitar. There are two coupling controls, one for coupling between the melody strings and one for coupling between the melody strings and the sympathetic strings.

Mapping of the MIDI Keyboard to Sehktar Strings and Frets



Tuning of the Sehktar

The ***Sehktar*** has 3 main melody strings, a Bass drone string, 2 Chikari (rhythm) strings, and 11 sympathetic strings (many sitars have 7 melody/drone strings and 13 sympathetic strings).

The first two melody strings are always tuned to notes ***Ma*** and ***Sa*** from the Indian scale, and the Chikari strings are always tuned to ***Sa*** and ***Sa*** one octave up. The tunings of the 3rd melody string and the bass string are adjustable. For ***Pancham Karaj***, or ***Ravi Shankar***, tuning the 3rd string is tuned to ***Pa*** two octaves down, and the bass string is tuned to ***Sa*** two octaves down.For ***Vilayat Khan*** tuning the 3rd and bass strings are tuned to notes depending on the raga being played (typically the most prominent and next most-prominent notes of the raga). In traditional tuning, the 3rd string is tuned to ***Sa*** one octave down, and the bass string is tuned to ***Pa*** two octaves down.

The sympathetic strings are tuned according to the particular raga being played, and usually include all of the notes in the ***That*** (or mode) associated with the raga. There are 10 ***That***s commonly used in Indian music. The ensemble snapshots give examples of the tuning of the sympathetic strings for each of these.

Westerners (like me!) might think that the Sehktar sounds out of tune. That is because its frets are specified so as to give a ***naturally tempered*** scale. This type of tuning provides purer harmonic intervals, which improves the coupling of the sound of the melody strings to the sympathetic strings.

Playing Tips

The Sehktar uses a fair amount of CPU cycles. You can change the Sampling Rate to a level that doesn't kill your computer. But I urge you to use the maximum possible sampling rate, as it makes a big difference to the sound. At 44KHz the sound is not too bad, but the sustain and sweetness of the sound is much improved at 88KHz.

Most of the familiar sitar sound comes from effective utilization of pitch-bending (or ***Meend***) on the main melody string. Practice makes perfect!

Playing according to the rules of ***Raga*** is also important in making the Sehktar sound like a Sitar. The right notes must be played, and these are different in rising passages than in falling passages. The sympathetic strings must be retuned according to the raga being played. If they are not, then the notes of the main melody will not all be sustained and resonated as they should.